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Type: **Contribué**

Perfectly parallel cosmological simulations using spatial comoving Lagrangian acceleration

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I will discuss perspectives for building accelerated forward data models of galaxy surveys. In particular, I will introduce a perfectly parallel approach to simulate cosmic structure formation, based on the spatial COMoving Lagrangian Acceleration (sCOLA) framework. Building upon a hybrid analytical and numerical description of particles' trajectories, sCOLA allows an efficient tiling of a cosmological volume, where the dynamics within each tile is computed independently. I will show that cosmological simulations at the degree of accuracy required for the analysis of the next generation of surveys can be run in drastically reduced wall-clock times and with very low memory requirements, and discuss perspectives for computing future larger and higher-resolution cosmological simulations, taking advantage of a variety of hardware architectures.

Auteur principal: LECLERCQ, Florent (Institut d'Astrophysique de Paris)

Orateur: LECLERCQ, Florent (Institut d'Astrophysique de Paris)

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